I claim

1. A system controlling flow to an engine intake via a control valve arranged to vary flow rates in passageways leading through a cooler and a cooler bypass, the system comprising:
   a. a hydraulic actuator arranged to adjust the control valve to vary the flow rates;
   b. a proportional solenoid operating a spool valve in a hydraulic circuit to the actuator so that the spool valve of the proportional solenoid adjusts hydraulic flow to the actuator;
   c. an electronic control having an input from a sensor of an engine condition and having an output of current to the proportional solenoid; and
   d. a mechanical coupling arranged to feed position of the control valve back to the spool valve in opposition to the proportional solenoid.

2. The system of claim 1 wherein a change of current to the solenoid in response to a change in an engine condition detected by the sensor moves the spool valve to change flow of hydraulic fluid to the actuator, adjust the control valve, and change the feedback via the mechanical coupling.

3. The system of claim 1 wherein the control valve is adjustable throughout a range of positions controlled by the proportional solenoid via mechanical coupling feedback.

4. The system of claim 1 wherein the electronic control is a microprocessor, and including a plurality of sensors of different engine conditions resulting in adjustment of the control valve as a function of the sensed engine conditions.

5. The system of claim 1 wherein the mechanical coupling comprises a cam moved with the control valve and a spring following the cam and engaging the spool valve.

6. The system of claim 1 wherein the mechanical coupling is a spring compressed between the hydraulic actuator and the spool valve.

7. A system regulating temperature of charged inlet air to an engine, the system including a supercharger or turbo charger, an intercooler, an intercooler bypass, and a sensor of engine temperature, and the system comprising:

a. at least one air valve arranged to vary a rate of cooled air flow reaching the engine via the intercooler and to vary a rate of uncooled air flow reaching the engine via the bypass;

b. a hydraulic actuator arranged to position the air valve to affect the temperature of the air flow reaching the engine intake in response to engine temperature detected by the sensor;

c. a circuit powering the hydraulic actuator being controlled by a spool valve moved by a proportional solenoid receiving electrical input from a controller in communication with the sensor; and

d. a mechanical feedback transmitting air valve position to the spool valve via a spring in opposition to force applied to the spool valve by the solenoid.

8. The temperature regulating system of claim 7 wherein the mechanical feedback includes a cam that moves with the air valve.

9. The temperature regulating system of claim 7 wherein the controller is in communication with another sensor of an engine condition other than temperature.

10. The temperature regulating system of claim 7 wherein a change in engine temperature changes the electrical input from the controller to the proportional solenoid, which moves the spool valve and the hydraulic actuator to change the position of the air valve to a position in which the mechanical feedback transmitted to the spool valve counterbalances the force applied to the spool valve by the proportional solenoid.

11. The temperature regulating system of claim 10 wherein the mechanical feedback includes a cam moveable with the air valve, and a spring engaging the cam and the spool valve.

12. The temperature regulating system of claim 7 wherein the mechanical feedback comprises a spring compressed between the hydraulic actuator and the spool valve.

13. A method of regulating a valved intake flow through a cooler and a cooler bypass to an engine intake, the method comprising:

a. using a hydraulically powered actuator to change the valved flow;

b. adjusting the hydraulic actuator with a spool valve positioned by a proportional solenoid to infinitely adjust the valved flow;

c. controlling the proportional solenoid in response to a sensor of engine temperature;

d. arranging a spring to move with changes in the valved flow; and

e. transmitting a feedback force to the spool valve via the spring.

14. The method of claim 13 including sensing engine conditions other than temperature and using a microprocessor to control the proportional solenoid in response to the sensed conditions.

15. The method of claim 13 including compressing the spring between the hydraulic actuator and the spool valve.

16. The method of claim 13 including compressing the spring between the spool valve and a cam that moves with changes in the valved flow.

17. A servomechanism operating a control valve regulating flow to an engine intake via a cooler and a bypass, the servomechanism comprising;

a. a hydraulic actuator for the control valve;

b. the hydraulic actuator being operated by a proportional solenoid positioning a hydraulic valve in a circuit to the actuator; and

c. position of the control valve being fed back as a variable force applied to the hydraulic valve in opposition to the solenoid.

18. The servomechanism of claim 17 wherein a cam moves with the control valve and a spring between the cam and the hydraulic valve feeds back the variable force.

19. The servomechanism of claim 17 including a sensor of an engine condition and a controller in communication with the sensor arranged to control the proportional solenoid.

20. The servomechanism of claim 17 wherein a spring is compressed between the hydraulic actuator and the hydraulic valve to feed back the variable force.

21. A servomechanism arranged to regulate at least one control valve directing intake to a diesel engine via a cooler and a bypass of the cooler, the servomechanism comprising;

a. a hydraulic actuator arranged to position the control valve;

b. a hydraulic circuit arranged to deliver hydraulic fluid to the actuator;

c. an engine sensor detecting a condition of the engine;

d. an electronic controller in communication with the sensor;

e. a proportional solenoid powered by the electronic controller in response to the sensor;

f. a hydraulic spool valve positioned by an armature of the proportional solenoid, the spool valve being arranged in the hydraulic circuit to the actuator; and

g. a compression spring arranged to feed back to the spool valve a spring force representing control valve position and opposing the armature of the solenoid, whereby the control valve is infinitely variable in response to the engine sensor.

22. The servomechanism of claim 21 wherein the electronic controller is a microprocessor, and including a plurality of engine sensors detecting a corresponding plurality of engine conditions, the plurality of sensors being in communication with the microprocessor.

23. The servomechanism of claim 21 wherein the spring is arranged between the spool valve and a cam moveable with the control valve to represent a position of the control valve.

24. The servomechanism of claim 21 wherein the spring is arranged between the spool valve and the hydraulic actuator to represent a position of the control valve.